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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,892	07/11/2003	Ralph H. Johnson	H26341-D2	4059
22913	7590	08/25/2005	EXAMINER	
WORKMAN NYDEGGER (F/K/A WORKMAN NYDEGGER & SEELEY) 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111			MENEFE, JAMES A	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/617,892

Applicant(s)

JOHNSON ET AL.

Examiner

James A. Menefee

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 32-71 is/are pending in the application.
- 4a) Of the above claim(s) 32-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 66-71 is/are rejected.
- 7) ☒ Claim(s) 68 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/9/04; 9/22/03; + 9/29/03
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

By preliminary amendment claims 1-31 were cancelled and claims 32-71 added.

Applicant's election without traverse of species III, claims 66-71, in the reply filed on 7/8/2005 is acknowledged. Claims 32-65 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

#### ***Drawings***

The drawings were received on 11/17/2003. These drawings are acceptable

#### ***Specification***

The abstract of the disclosure is objected to because it is over 150 words. Correction is required. See MPEP § 608.01(b).

#### ***Claim Objections***

Claim 68 is objected to because of the following informalities: "conductivity" at the end of the claim should read "conductive". Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2828

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 66 is rejected under 35 U.S.C. 102(b) as being anticipated by Nilsson (US 5,781,575). Nilsson discloses an optoelectronic device 10 comprising a first mirror 1a, a second mirror 1b, an active region 3A situated between the first and second mirrors, the active region including a first p-n junction at 3a, a first tunnel junction 4a adjacent the first p-n junction, a second p-n junction at 3b, and a second tunnel junction 4b adjacent the second p-n junction. See Figs. 2, 2a, and 2b and the discussion thereof.

Claims 67-69 are rejected under 35 U.S.C. 102(b) as being anticipated by Choquette et al. (US 5,493,577).

Regarding claim 67, Choquette discloses an optoelectronic device comprising first mirror 14, second mirror 16, active region 18 situated between the mirrors, isolation layer 20 defining an aperture that encircles an optical cavity. See Figs. 1-3 and discussion. The unoxidized portion of layer 20 is doped and therefore highly conductive. See col. 10 lines 4-14.

Regarding claim 68, as noted above the highly conductive layers 20 are doped. Col. 10 lines 4-14.

Regarding claim 69, Choquette discloses that the first few periods of each mirror stack proximate the active region may be reduced in dopant concentration, and therefore lightly doped. Col. 7 lines 7-11. Thus, there are disclosed lightly doped layers interposed between the isolation layer 20 and the active region 18.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 70-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choquette in view of Hegblom et al. (Electronics Letters, vol. 34 no. 9, April 1998). Choquette discloses the limitations of the claims as shown above, but does not disclose that the isolation layer includes a tapered tip positioned at or near an electric field null. Hegblom teaches a similar VCSEL where the oxidized portion is tapered, therefore has a tapered tip, and is located at the standing wave null. It would have been obvious to one skilled in the art to have a tapered tip for the aperture so that it is more lens like and optical scattering loss is nearly eliminated, as taught by Hegblom. See par. bridging pages 895-896. It would have been obvious to one skilled in the art to locate the aperture at the null so that perturbation caused by the difference in reflection of this layer will be minimized, as taught by Hegblom. P. 896, col. 1, near bottom of page.

*Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bond et al. (IEEE Phot. Tech. Lett. vol. 10, no. 10, Oct. 1998) also shows apertures located at the null of electric field.

Art Unit: 2828

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James Menefee  
August 19, 2005